

**Amendments to the Claims:**

1 –18 (Cancelled)

19. (New) A process gas diffuser, comprising:

a first diffusion stage including a plurality of independent radial channels, each radial channel having a unique gas supply passage and corresponding gas zone within a reactor chamber;

a second diffusion stage configured to diffuse process gas through a plurality of diffusion holes into each gas zone of the reactor chamber; and

a gas diffusion stage located between the first diffusion stage and the second diffusion stage, the gas diffusion stage configured to include gas transition passages in fluid communication with a corresponding radial channel of the plurality of radial channels of the first diffusion stage and with the plurality of diffusion holes of the second diffusion stage.

20. (New) The process gas diffuser of claim 19, wherein the quantity of gas transition passages varies between each radial channel.

21. (New) The process gas diffuser of claim 19, wherein the quantity of diffusion holes varies for each zone.

22. (New) The process gas diffuser of claim 19, wherein the diameter of gas transition passages varies between each radial channel.

23. (New) The process gas diffuser of claim 22, wherein the diameter of each gas transition passage increases for each associated radial channel located further from the center of the process gas diffuser.

24. (New) The process gas diffuser of claim 19, further comprising a unique gas source for each unique gas supply passage configured to control gas flow rate for each of the plurality of independent radial channels.

25. (New) A method for process gas distribution in a reactor chamber through a diffuser, the method comprising, supplying process gas to a diffusion stage including a plurality of radial channels, each radial channel having a unique gas supply passage and corresponding gas zone within the reactor chamber, the process gas flowing from each unique gas supply passage to each corresponding one of the plurality of

radial channels to a gas diffusion stage comprised of at least one gas transition passage in fluid communication with a corresponding radial channel and with at least one diffusion hole in the lower diffusion stage.

26. (New) The method of claim 25, further comprising controlling gas flow characteristics by varying quantities of gas transition passages for each corresponding radial channel.

27. (New) The method of claim 25, further comprising controlling gas flow characteristics by varying diameters of gas transition passages for each corresponding radial channel.

28. (New) The method of claim 25, further comprising controlling gas flow characteristics by metering gas flow to each unique gas supply passage.